

DOCUMENT RESUME

ED 108 388

EA 007 313

AUTHOR Maclure, Stuart
TITLE Innovation in Education--Sweden. Technical Report.
INSTITUTION Organisation for Economic Cooperation and
Development, Paris (France). Centre for Educational
Research and Innovation.
REPORT NO 80.548; CERI-EI-71.02
PUB DATE 8 Jun 71
NOTE 49p.; Related documents are ED 069 572 and EA 007
313-316
AVAILABLE FROM OECD Publications Center, Suite 1207, 1750
Pennsylvania Avenue, N.W., Washington, D.C. 20006
(Free)

EDRS PRICE MF-\$0.76 HC-\$1.95 PLUS POSTAGE
DESCRIPTORS *Case Studies; Change Agents; *Change Strategies;
Educational Administration; *Educational Innovation;
Educational Objectives; *Educational Research;
Elementary Secondary Education; *Government Role;
School Systems
IDENTIFIERS *Sweden

ABSTRACT

This publication is one in a series of case studies dealing with educational innovation in various western European countries and the United States. This particular report discusses educational innovation in Sweden. The author attempts to describe the basic structure and character of the Swedish educational system, in addition to examining specific educational innovations and strategies for reform. In his analysis, the author concentrates primarily on describing, rather than criticizing or commending, the Swedish situation. The appendix contains a descriptive table listing school research projects underway in Sweden during the 1968-69 school year. (JG)

* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *

ED108388

ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

Centre for Educational Research
and Innovation

CERI/EI/71.02

Technical Report
Paris, 8th June, 1971

Or. Engl.

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRO-
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGIN-
ATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRESENT
OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY.

INNOVATION IN EDUCATION

- SWEDEN -

by

Stuart Maclure, Editor of The Times
Educational Supplement, London, England.
The report is based on a visit to Sweden
by Mr. Maclure and Mr. Krste Crvenkovski,
Predsednik Saveza Komunista Makedonise,
Centralni Komitet Saveza Komunista
Makedonise, in April, 1969.

EA 007 313

80.548

2

Free

TABLE OF CONTENTS

	<u>Page</u>
PREFACE	5
A NOTE ON THE SWEDISH ADMINISTRATIVE SYSTEM . .	7
Part I EDUCATIONAL INNOVATION IN SWEDEN: INTRODUCTION .	9
Political Commitment	9
Central Administration	10
The Teaching Profession	12
Part II INNOVATION STRATEGY	15
Aims and Objectives	15
Methods of Revision	21
Training and Retraining of Teachers	22
Rolling Reform	24
Research and Development	29
Systems Approach	34
Individualisation	38
Local Development Groups	44
Part III CONCLUSION	47
Objectives	47
Centralisation	48
Research and Development	49
APPENDIX	51

PREFACE

The following case study is one in a series of five dealing with innovation in education. All the studies are descriptive in nature and, as the work of five different authors writing in their personal capacity, they represent five quite individual syntheses and interpretations of vast amounts of information. Yet the confusion that might be expected from this method does not result. What emerges from these studies is instead a reasonably coherent statement of educational responses to the post-war demands of many more people for more and better education.

Perhaps it is not remarkable that the demands have been exerted so consistently on such a variety of nations, nor that the response to them has for the most part been so quick and positive. The nations examined in this book are remarkably similar in that all have a long and honourable tradition of public education, an industrialised economy and a high standard of living. At first glance it even appears that their solutions to the problem posed by recent educational demands are unusually similar: structural reform, curricular reform, compensatory and/or individualised learning systems - examples of each are easy to find in any setting. Yet a closer reading of the five case studies reveals wide and interesting variations: in priorities, in perceived solutions, in strategies evolved or developed to implement them.

Such variety of course reflects to a large extent differences in 'national climate', that peculiar combination of values, objectives, aims and administrative tradition which, aside from language, makes a nation distinctive. The explication of these differences is thus a hidden theme of the five case studies taken as a whole, and an understanding of this hidden theme is necessary to illuminate the more obvious themes of change and growth.

An explanation of this point can be found by comparing, even superficially, Scandinavian countries such as Norway and Sweden on the one hand and the United States of America on the other. At least from the viewpoint of the outside observer, Norway and Sweden have much in common. Both relatively small in terms of population, they can also claim a remarkably unified social and value structure. Furthermore, their style - if such a generalisation can be made - seems to be to have a clear idea of goals and then to set about methodically reaching them. This process is aided by the existence of strong central governments which are able to plan and to legislate with a reasonably clear assurance that what they propose will be achieved. Thus there exists in Norway the National Council for Innovation in Education whose mandate it is to make reality of reform laws passed by the central Parliament. The Parliament, concerned in recent years with "large questions of the role of schools in Society", and sure enough of its constituency, has concerned itself largely with structural reform and new curricula - on a national scale.

The situation in the United States is quite different, even if the question of relative size of total population is ignored. The American federal government is based on a system of checks and balances so fine that it is often hard to determine either the source of impetus or its ultimate manifestation. The situation is further complicated by the well-protected existence of states' rights - particularly the control of education - and, once the issue of taxation is raised, by municipal and regional claims as well. Perhaps more important, the rich diversity of the American population inevitably means conflicting social and ethnic interests, values, and views of national priorities. The past decade of American life has indeed been one of fast-changing goals and objectives and of massive social upheaval. Much of the upheaval has connected itself to education and made demands accordingly: in the light of this political and social back-ground, it is not surprising that American education responded by producing such a variety of innovations in every area and at every level that the final array can be quite bewildering, whilst at the same time providing a vast reservoir of experience for others.

England and the Federal Republic of Germany likewise provide differences quite distinctly their own. Writing of her own country's approach to recent educational change, the author of the English case study notes.

".....the English style is distinctive. You can seize on it instantly. There is no acceptance of common objectives, except in the most general sense which inspired the last major education act: the need to widen opportunities and eliminate the poverty both of individual children and of the public provision of education. There is no national plan for education, no law which specifies where development is necessary as in some OECD countries. There is almost no theory. The point is characteristically made in a recent major report on education: 'we invited the help of a number of distinguished educationists and professors of educational philosophy ... They all confirmed the view that general statements of aims were of limited value and that a pragmatic approach to education was likely to be more fruitful.'"

The reference to "two decades of non-reform" in German education, a phrase coined by Professor S.B. Robinsohn, is slowly becoming eroded, especially during the last two years, which have been marked by fundamental changes in many parts of the school system. With increasing co-operation between the Länder and with the initiatives of the new Ministry for Education and Science, the need for a more systematic approach to educational reform, and especially to educational experimentation, seems more important in Germany today than in many other countries.

Despite these differences in background and style, the five country studies do show one overriding problem in common: the need to change and improve their educational systems. Furthermore, as their experience increases, they all face the reality that explicit measures to facilitate the management of educational change are necessary, that innovation and improvement cannot be haphazardly left to chance.

A NOTE ON THE SWEDISH ADMINISTRATIVE SYSTEM

For the sake of clarity elsewhere in this report it is necessary to include a brief note on the Swedish administrative system as it applies to education and educational innovation.

Swedish Ministries are, by international standards, small. They are the secretariats for the Ministers, concerned with the political and economic policies for which the Ministers are answerable to Parliament. They are concerned with policy planning on a short and long term basis.

Much of the work which would fall to a Ministry in most European countries is done by independent boards - in the case of education, the National Board of Education (responsible for schools) and the Office of the Chancellor of the Universities (responsible for higher education). These independent boards administer the law of education.

Local administration is in the hands of the elected local municipalities who number more than 900(1)-(for a population of 7.8 million)-and most of which are very small.

National policy is to give more power to the local authorities and to reduce their number. The curriculum is firmly controlled from the centre, though an increasing discretion is being given to local authorities over optional areas of the curriculum. The costs of education are divided as to 60 per cent from the State and 40 per cent from the municipality. Teacher's salaries are tied to state grants.

In addition to the municipalities, powers are delegated to county education boards which are decentralised organs of the central government.

Also of great importance are ad hoc Royal Commissions set up from time to time to prepare recommendations on major aspects of policy. In some cases these Commissions include strong political representation as in the case of the 1946 Commission which formulated the proposals laying down the main lines of comprehensive reform. In others, though the public interest is always clearly represented, experts may be more to the fore.

(1) The number of education authorities was reduced to 464 by amalgamation of districts in 1971.

PART I

EDUCATIONAL INNOVATION IN SWEDEN: INTRODUCTION

Sweden's strategy of change in education is coherent and self-conscious. It is articulated to a degree which is unusual among OECD countries. It is based on the formulation of objectives at every stage and level, and the application of consistent planning procedures to achieve those objectives.

The strategy is now being adapted to the concept of 'rolling reform', by which is understood a continual process of evaluation and renewal. The aim is to make innovation a permanent state in which curriculum and organisation are under constant review in the quest for better responses to changing circumstances, new knowledge, more effective learning and better use of resources.

Before going on to describe the strategy in greater detail and to indicate some of the directions in which innovation in Swedish education is pointing, it is necessary first to discuss some of the background factors. These include the political basis of Swedish educational reform, the strongly centralised nature of Swedish educational administration, and the characteristics of the Swedish teaching profession.

Political Commitment

At the centre of the strategy is a clear political commitment. This needs to be stated at the outset. The Swedish approach to educational reform can only be understood in the light of a solid political consensus. All the main political parties now accept the objectives of the comprehensive school which are, in effect, the objectives of Swedish education. This is not to say that there is no controversy, nor that earlier decisions were easy to reach. But what stands out as abundantly clear is that the reform has its origin in bold decisions taken on political and social grounds and that the commitment to social equality and mass education which these decisions entailed has now become part of the Swedish way of life - no longer a matter of acrimonious debate, but rather part of the political climate.

The reforms emanate from a Royal Commission set up in 1946. During the second world war there had been lengthy debates on the future of Swedish education. The system at that time was divided. The education of most of the children was limited to the elementary school. Only a small proportion were taken out of the elementary school for selective secondary education. Commissions of experts had produced a succession of reports in which there were conflicting proposals. The 1946 Commission, in which the politicians were strongly represented, cut through the pedagogic controversies and demanded a policy squarely based on social and political premises. In effect, they asserted that education was too important to be left to the educational experts. Instead of allowing pedagogic considerations to determine educational organisation, the Commission insisted that the

educational system, a potent agent of social control, should be subordinated to basic social policies, and in particular to ideals of social equality and co-operation on the one hand, and the development of individual talent on the other.

Here, in the jargon used by American curriculum experts, was the unambiguous assertion of 'societal' interests from the outset. Just as this has remained dominant in discussion of the aims of the education system as a whole, so too has it applied to the application of reforms at every level. The Royal Commission technique has been applied to the comprehensive school (with the Comprehensive School Committee of 1957) and the gymnasium (the Gymnasium Committee) and to subsequent investigation of the fackskola (continuation school) and entry to higher education. All these commissions operated under directives which interpreted the main over-riding policy objectives.

This is something which has to be borne in mind in connection with the research and investigation carried out for these commissions, as the OECD report on Educational Policy and Planning in Sweden (1967) made clear. The interplay between the politicians and social scientists has amounted to a dialogue inside and outside the several Royal Commissions. Much of the dialogue is inconclusive: policy in the end has had to be based on judgement, aided but not determined, by research. Professor Husen's comment, quoted in the OECD document, already referred to, is still to the point: the research findings 'first and foremost importance lay in the fact that they have contributed to removing a host of prejudices and showing that what was involved in the debate were value judgements rather than facts. The school reform is, after all, a political question'.

It seems important to stress this from the start, especially as there could conceivably be a temptation as 'rolling reform' relies on techniques of Research and Development, to expect too much of the research function. The objectives are based on political conviction, not research. If - to take an extreme case - political will demands as an objective that water should flow uphill it would be imprudent to expect research to provide conclusive evidence on which to base such a policy.

The political will which lies behind Swedish educational policy has to be seen against the background of the Swedish political system in which the present governing party has occupied a leading role since the early 1930's. It is this long-term stability of political control which has made possible the ordered educational reform and the careful preparation which has preceded each stage of its application. It has also provided the healing element of time by which much of the heat can be removed from the bitterest controversy. And this same political stability, which has facilitated long term educational reform itself, possibly stems from a social homogeneity and common purpose in a close knit community of less than 8 million people, which makes the direction of the reform generally popular.

Central Administration

If the clarity with which social and political goals have been articulated is the first key to an understanding of Swedish educational reform, the second concerns the system of educational administration.

Swedish education is tightly controlled and directed by the central government, through the Ministry of Education and its twin administrative agencies, the National Board of Education and the Office of the Chancellor of the Universities.

School reform and innovation is, therefore, directed from the centre. The initiative is handed down through Parliament to the National Board of Education, which in turn must organise change and create the circumstances in which innovation takes place. The strong central control extends not only to matters of organisation and of 'quantitative' planning but also to the 'qualitative' planning of the school curriculum. The syllabus and study plan for each type of school is the direct responsibility of the central government. Commissions set up to carry through major changes in organisation have been expected to plan the whole programme of studies as well as the administrative changes which a new system of organisation might entail.

It so happens that a part of the reform is intended to introduce a greater degree of decentralisation. Before the introduction of a comprehensive system, the elementary schools and the vocational schools were run by the local municipal authorities, while the secondary schools were State schools administered by the central government. The policy is to increase the powers of the local authorities - which now have been given responsibilities for the comprehensive schools and the secondary schools - without forfeiting the even standards of school provision which are claimed to be the consequence of centralisation.

In addition to the local authorities there is also a layer of 'decentralised central government' based on the 24 administrative county units whose general functions include the appointment of teachers for the 9 year comprehensive school and in-service training. These county boards of education are further responsible for the planning and co-ordination of education in the different municipalities.(1)

It can be seen that, with some 900 local authorities in a population of less than 8 million, many of the local bodies are very small indeed, their chief officers being local head teachers. At the other extreme is the local authority for the City of Stockholm with a population of 800,000 and a director of education supported by a strong professional staff.

While, therefore, the policy of decentralisation has already begun to have some effect - and some of the large authorities are, themselves, centres of innovation - the fact remains that the Swedish strategy is firmly founded on a strong central authority directing, and if necessary imposing change at the will of Parliament. If the word 'impose' carries extreme overtones, all that is intended is to clarify the source and the authority for innovation which is undoubtedly located in the agencies of the central government.

It is this centralisation which has ensured that from the outset matters of internal school management such as streaming and differentiation have been considered alongside larger questions of organisation. Similarly, responsibility at the centre for the

(1) The number of education authorities was reduced to 464 by amalgamation of districts in 1971.

planning of the curriculum means responsibility also for teaching methods. Where, in some systems, these matters might have been left to the discretion of local authorities or to the teachers themselves, Swedish centralism requires that they be considered as a whole and at the centre.

It would be wrong, in stressing this aspect of Swedish educational administration, to imply an authoritarianism which does not exist. But there is no doubt about where authority lies, nor yet is there any reason to doubt that this is an important (and possibly a somewhat corrosive) element in the relations between teachers and administrators. It also forces the innovators to employ fairly rigid techniques where they might prefer to act in a more flexible way.

The Teaching Profession

Any strategy for innovation within an educational system must take account of the teachers who already staff the schools. Here Sweden is in the remarkably fortunate position of having a good supply of well qualified teachers, enjoying high prestige and relatively high salaries in a community which recognises the value of education.

The educational system has rapidly moved out of a situation in which there were too few teachers into one in which there is now something like a balance between supply and demand. Class sizes in the comprehensive schools assume not more than 30 children to a class except for the first year (the seven-year olds) where the maximum permitted number is 25. The teacher pupil ratio is, of course, much more favourable than this - about 1:15 in the comprehensive schools and 1:13 in the secondary schools.

The class teachers - those teaching in the first six grades of the comprehensive schools (ages 7 to 13) - receive a two and a half or three year training at colleges of education. Subject specialists for the upper forms of the comprehensive schools and the secondary schools have a university degree followed by a year's teacher training. A second degree is normally required for senior posts in the upper secondary schools. The differences in the education and training of teachers are reflected in their professional associations, their salary scales and to a large extent in their attitude towards the educational reform.

The combined effect of a strong political will and a strong central administration may have contributed somewhat to the alienation of certain sections of the teaching profession, particularly 'subject specialists' in the upper forms of the comprehensive schools and the gymnasias. On the other hand, new organisation, new curriculum and new methods have been pressed upon them from above, some of which have demanded changes in their conditions of service as well as their pedagogic technique. Moreover, the very nature of the political basis of the reform has meant that any groups who opposed aspects of the change - for whatever reason - have tended to be branded as conservative, if not reactionary. None of this is surprising - if the educational reform is indeed part of a social revolution, a certain amount of ideological pressure is to be expected. But it certainly increases the importance of in-service training (of which more later) and, it could be that it does little to sharpen the self-critical

faculties of those who are most committed to the reforms, and who have been chosen for that reason to carry them out.

This could all become of greater importance as the Swedish system moves forward from the heroic period of radical reform, when major steps forward were initiated by Royal Commission leading to legislation, into a period of 'rolling reform' in which the pressure for innovation is expected to come from within the educational system.

It will be seen, then, that each of these three aspects of the Swedish educational scene - the political commitment, the centralised administration and the large and highly qualified teaching profession - contributes positively and negatively to the process of innovation. The political foundation is essential: yet the very strength of political will necessary to carry out long term reform can set up its own orthodoxy which may not always be conducive to innovation. The centralised administration provides an efficient instrument for organising change. But so far this has been a means of introducing innovation from on top, with the limitations which this implies in respect of the professional self-confidence and inspiration of the teachers. The highly qualified teaching profession makes possible high standards and ambitious policies which would not be open to a system with overlarge classes and undertrained staff. But this, too, can be a limitation on innovation: if radical change is needed which alters the whole role of the teacher, the presence of a powerful cadre of traditionally minded professional men and women is not going to be an unmixed blessing.

PART II

INNOVATION STRATEGY

The basic strategy of Swedish educational innovation assumes

1. Clear political decisions on the goals of the educational system and the objectives to be achieved in each type of school. These major political decisions have, on the whole, been taken on the advice of Royal Commissions on the basis of which the Minister of Education formulates legislation for Parliament.
2. The refinement of these general goals and objectives into a working curriculum and study plan for each type of school.
3. A programme of in-service training for teachers to assist the introduction of new curricula and teaching methods.
4. A programme of Research and Development to support the policies of reform and innovation.
5. A system of continual revision by which the curriculum and study plan for each type of school is constantly assessed in terms of its own objectives.

Aims and Objectives

According to the Swedish Schools Act of 1962, the general aim of the schools system is 'to impart knowledge to the pupils and train their ability and also, in collaboration with the homes, to promote the development of the pupils to become harmonious persons and active citizens aware of their responsibilities'.

These broad aims apply particularly to the comprehensive schools or compulsory schools taking pupils from the age of 7 to 16 through the first nine years of schooling. But they also apply to the secondary schools and are taken as the point of departure for the Syllabus and Study Plan manual (Läroplan) for the new gymnasium.

This general expression of the individual and social aims of the educational system has been expanded and made more specific by the policies and statements of Ministers and educational leaders. As Swedish techniques of innovation are directly linked to the establishment of objectives and the systematic planning needed to achieve them, it may be helpful to summarise the five main objectives of the Swedish educational system, as set out in the OECD publication entitled Educational Policy and Planning in Sweden (1967).

Objective 1. This relates to equal opportunity for public education without regard to income, social origin, sex or place of residence. It also recognises that while opportunity should be universal, individual talents differ, and that the aim of the school system should be to meet the differentiated needs of various groups

of students. No one branch of education, however, 'should in itself be considered more worthy of esteem than another, the entire school system constituting a co-ordinated whole'.

Objective 2. This concerns the function of the school system to safeguard and strengthen the democratic system which depends on co-operation and tolerance. From this are derived certain sub-goals, a common core of learning in the comprehensive schools and the postponement of differentiation; group work and discussion methods; civic education; education which stimulates critical thinking.

Objective 3. The third set of objectives are directed towards general economic development - the preparation and training of skills in the light of national manpower needs. But this is subordinate to the individual and social objectives summed up in the first two objectives above.

Objective 4. This commits the educational system to be flexible in order to respond to changing social, individual and economic needs. From this, it follows that education must be broad enough to allow for new vocational needs which may develop and require individuals to change their occupation later on in life, and that premature specialisation and dead-end courses must be discouraged.

Objective 5. This has to do with the effective use of the educational system's limited human and material resources, by a commitment to 'rationalisation' and the pursuit of the most efficient way of using teachers and arranging learning systems.

An important part of the Swedish method of innovation has been based on the refinement of general aims of the educational system into specific objectives for teachers in schools. The setting of clear objectives has been used both as a means of changing the practice of the teachers, and also to provide criteria against which to evaluate the success of the innovatory process.

In this the Läroplan for each type of school plays an important part. This document, running to 500 closely printed pages, which has no counterpart in less centralised schools systems, lays down the syllabus, and study plan for the type of school in question. In addition to setting out the content of the courses to be covered and the number of hours to be devoted to each subject, it includes a long introductory section explaining and elaborating the objectives of the school and the recommended methods of instruction and internal organisation which are related to these objectives. Here is part of the Introduction: Goals and Principles to the Läroplan for the new gymnasium which came into operation in 1966.

"1. Comprehensive Schools - Gymnasium

"1.1. The purpose of the education of children and young people, provided by society, is to communicate knowledge and develop skills and, in collaboration with the home, encourage the development of the pupils into harmonious people and able, responsible members of society.

"This is the substance of the first paragraph of the new Education Act. It refers to all instruction provided by society

to children and young people, whether voluntary or compulsory. Thus it is valid for the gymnasium as well as for the comprehensive school.

"In the gymnasium, as in the comprehensive school, the work of the school will be focused on the individual pupil. The aim of the work of the school is to promote the all-round development of each pupil, to encourage the development of his personality and to make him a free, independent and harmonious being. The training which the school provides must be individual training. ..

"The individual is ... a fellow-creature and a citizen. He is a member of a family and of a circle of friends and acquaintances, and he is a member of society. ... Therefore the gymnasium, like the comprehensive school, must give social training. The social training provided by the school must lay the basis of, and develop, those qualities which will, in a period of rapid development, enable the pupils to support and strengthen the democratic principles of tolerance, co-operation and equality of sexes, nations and people. One of the principal aims of the social training which the school provides is to instil into the pupils respect for truth and justice, for the human dignity of all people, for inviolability of human life and thereby for the right to personal integrity. ...

"2. Tasks of the Gymnasium

"In the work of the gymnasium special attention should be given to the following:

"2.1. The instruction provided by the gymnasium is based on the nine-year comprehensive school. It must provide a foundation for further study at university level and other post-gymnasium education, and for immediate entry into the labour market.

"One principal element of the instruction provided by the gymnasium is to develop an independent and critical attitude. The result may vary within wide limits, but from the very beginning the pupils should become accustomed to an inquiring attitude towards the knowledge and information offered them inside and outside the school, to check the correctness of information, the structure of arguments and the reliability of conclusion, and to make strict demands on intellectual honesty in their evaluations of others' information and in expressing their own views. ...

"A pupil should always be allowed, after independent consideration, to accept or reject a judgement. This implies that the demand for objectivity should be made a general rule for all instruction. ...

"In modern society understanding of, interest in, and willingness to involve oneself in, other people's problems are necessary complements to knowledge. Insight into human and civic situations is important for all those who, in their work, have to act as leaders, or co-operate in other ways with people, and influence other people's conditions. Work at school, as in the

"fields of science, administration and economic life, is based upon continuous co-operation between people. Collaboration in social, occupational, political and other groups demands the will to understand and to co-operate, even when opinions differ. Work at international level involves that people judge others on the basis of their own traditions, history and social life.

"By paying attention in its work to the personal development of the pupils, the gymnasium also satisfies the demand for social training. Such training, no more than individual development, cannot be separated from other activities in the gymnasium. Social training is intimately bound up with the whole work of the school. Different methods of work, such as group work or individual study, satisfy this demand just as well as do school and environmental practice, or special preparation for future tasks.

"2.2. An important task of the gymnasium is to develop further what the comprehensive school has taught the pupil in terms of general ability to communicate with others. A central task in this is to develop his linguistic skill. The ability to express oneself clearly and logically in one's own language, to formulate one's thoughts both verbally and in writing, must be developed. If it trains a great number of its citizens in the use of foreign languages, Sweden will be able to maintain and widen the contacts which further its cultural, technical, economic and social expansion. Skill in foreign languages is therefore necessary. ...

"Mathematics is one of the means of communication which have become increasingly important. Quantitative methods have gained ground also in studies in which formerly these methods were not employed. They have also gained a footing in economic life and in administration; this is especially true of statistics, which have become a valuable tool in making predictions, analyses of costs and work, and so on.

"The aim of the gymnasium, therefore, must be, over and above the foundation laid by the compulsory school, to develop the mathematical skills of the students.

"2.3. In order to satisfy the demand for preparation for future education, or occupation, the gymnasium must provide the special preparation which the individual may want and need. It is impossible, however, to allow each student to realise his interests. The personal aspirations and the demands of labour market and society must be brought into balance. To determine this balance, however, is not the task of the gymnasium. Therefore, there must be, in the curriculum and organisation of the school, possibilities of taking into account personal talents and interests, and of letting them guide the pupil towards a more or less individualised programme of studies. But even if divergences are allowed within the common framework, the result must not be that the individual pupils' study programmes differ too much from the demands made by the branch in which they will be working after school.

"In particular in the economic and technical streams, the special preparation the gymnasium offers must be planned carefully in view of the tasks the students will be confronted with in their working life. By its instruction, the gymnasium must offer students a preparation for the labour market, for many of them will, at the end of their gymnasium studies, go direct to economic life and administration.

"2.4. Society demands - besides certain special preparation and skills in communication - general knowledge and skills common to all or most people, a frame of reference in which important phenomena in society and culture can be placed, and which will facilitate contacts with and understanding of one's own and of other peoples's culture."

The Läroplan then goes on to discuss common core. The emphasis is strongly sociological. Social and economic geography and civics are needed to encourage a proper understanding of Scandinavia and other countries and peoples in Europe and in "the so-called under-developed countries with which relations are more and more intensified." With this goes an understanding of comparative religion and cultural differences. All also are required to have an introduction to science and technology, to history and art. Other aspects of the programme singled out for special mention include teaching about careers and education beyond the school stage and physical education. There follow comments on how pupils should be taught to carry out their work.

"2.5. It is one of the tasks of all types of school to develop the pupils' working habits. When they leave school, the pupils should be able to perform tasks which require a sense of responsibility, whether in their work or in connection with further education. For the gymnasium this means that its pupils, when they leave school, shall be accustomed to taking the initiative in planning and performing large tasks, independently or in co-operation with others. This includes the ability to collect the necessary information, to interpret and evaluate it, to plan their own work, and finally to assemble and report the results. The gymnasium must further develop the training in techniques and skills of studying and carrying out tasks with which a beginning was made in the comprehensive school. This implies also that the methods of studying in the gymnasium must be such that they help to develop the students' ability to make observations and to take the initiative, as well as to make independent judgements."

This general Introduction is then followed by a second section on 'General Principles' which describes in greater detail how the earlier-stated objectives may be reached in school organisation and instruction.

Among other things, it spells out ways of promoting co-operation between home and school; discusses the methods of consulting pupils through the school's 'students' advisory council'; draws attention to the importance of educational and vocational guidance; lays down principles for the options leading to higher education or employment. There is a lengthy section on 'teaching' which indicates the manner in which the teachers should prepare their courses and teaching materials.

Another section sets out to show how, by group work arranged in various ways, the curriculum can be made, in the official view, to contribute to the general aim of co-operation between pupils. Yet another concerns the objective of independent study, study training and guidance in study technique, on which great importance is placed. Marking is discussed at some length in view of a decision to end the formal student examination at the end of the gymnasium and to introduce a system of assessment over the whole gymnasium course designed to enable teachers to mark fairly from one end of the country to the other without recourse to external examinations except as a moderating technique.

The justification for quoting at this length from the Introduction of the Läroplan is the significance which the Swedish theory of innovation attaches to the statement of clear objectives. This is at the heart of the system. There is, of course, room for debate as to how clear the statement of objectives really is. Some of the objectives, inevitably, are in conflict with one another - or rather, a state of tension exists in which a series of not wholly compatible aims have to be held together in a working compromise. A statement of goals does not relieve the planners or the practitioners of the need to have priorities. All the objectives become priorities but some are higher in rank order than others, and to be a low priority comes to mean the same as being no priority at all.

Nevertheless, whether or not the statement of objectives is, or is not quite as sure a guide to action as, in theory, it should be, it serves its purpose because it is accepted at face value. It becomes a potent weapon in the hands of the planner, a blunt instrument with which to concentrate attention on the application of agreed policy.

The official position is that the Läroplan is only guidance for the teachers, prepared by the National Board of Education, which experienced practitioners in the schools may take and apply at their discretion. The study plan and syllabus, including the way in which the weekly hours of work are to be divided, is centrally determined (though local authorities are being given more marginal discretion). These have to be followed. But much of the scheme is written in general terms or provides options which allow the teacher considerable latitude and room for manoeuvre. And, although on matters of method and approach, the Läroplan represents the collective wisdom of practical teachers, inspectors and advisers, the teacher in the classroom is technically free to prefer his own methods, provided they are directed towards the overall goals of the plan.

The impression which a visitor to Sweden is likely to gain is that the National Board of Education may be tempted somewhat to overstate the importance and influence of this document which the teachers are at pains (for reasons of professional autonomy) to understate.

These differences of emphasis may not be unimportant in a consideration of techniques of innovation as great weight has been attached within the National Board of Education to the process of regular revision of the Läroplan.

Methods of Revision

This is organised within the National Board of Education in the department of general education (UA) where there are working groups and committees concerned with curriculum in each type of school. As soon as a new curriculum is brought into operation it is the task of the relevant group to set about the evaluation of the working of the curriculum in the light of the stated goals and to prepare proposals for revision.

These revisions have tended up to now to have been undertaken in conjunction with changes in organisation following the operations of a Royal Commission. The decision to introduce the new upper secondary school in 1971 in which the gymnasium, facksola and vocational schools are to be brought together, has necessitated a full scale revision of the curriculum.

Techniques by which the working groups within the National Board of Education have carried out the revision have varied, according to different types of school and different sections of the curriculum. One method has been to investigate the existing practice by the use of mixed reference groups - teachers, representatives of employers and employees and universities, inspectors, administrators, and often students themselves - and for the officials of the National Board of Education to move forward in the light of the recommendations of these bodies. According to circumstances varying weight might be attached to the subjective judgements of teachers and others, and to the more objective methods devised by social scientists in University and other research institutes.

Curriculum building has been undertaken within the National Board of Education, taking into account the availability of teaching materials on one hand and of the training and retraining of teachers on the other. The stages, however organised, have been, first, the investigation of how the schools are working - how closely they are following the study plan and how successfully they are working towards the stated objectives. This has meant evaluating not only the work of the teachers but also the study plan itself. To a pragmatic observer there appears to be a heavy reliance on the statement of abstract principle and the confident assertion on a priori grounds that particular practices in school will contribute (or ought to contribute) to the fulfilment of these abstract principles. Part of the work on the revision of the study plan must be to test whether the a priori reasoning has been borne out in practice.

Having evaluated the present practice, on the basis of reports from school inspectors and reference groups of teachers and teacher-consultants, the working group has then had to take into account any changes in demand - from the employers, trade unions, universities and from the pupils themselves, and any conclusions these consumers of education may have reached about the working of the existing curriculum.

New curricula have then been proposed which, without altering the objectives, have been judged to contribute more effectively to their achievement. This has been where the general suggestions have had to be translated into a study plan which could in turn be passed on to the teachers in the schools, and used as the basis for in-service training.

It is clear that there have been many differences in the way the actual curriculum building has been done in the past - in the amount of detailed planning which has been undertaken and in the extent of the field-testing which has been included. Different methods have been found to be appropriate for different types of schools and even for different subjects within the curriculum as can be seen, for instance in the revision of trade courses at the vocational school.

Training and Retraining of Teachers

Swedish educational innovators have clearly recognised the critical importance of training and retraining in any strategy of innovation. Spending by the National Board of Education under this heading rose from 1.14 million Sw. Kr. (\$230,000) in 1960 to 31.62 million Sw. Kr. (\$6.3 million) in 1969. Some 260 teacher-consultants are in service, working half-time as teachers and half-time as curriculum advisers with other teachers. It is estimated (1969) that some 10,000 teachers will take part in courses, most of them lasting a week but some extending to two or three weeks. In addition to the expenditure from central funds the local authorities spend about 10 million Sw. Kr. (\$2 million) on local in-service training schemes.

During recent years there has been an attempt to promote more short courses and local teachers' study circles where specific curriculum questions can be studied with the aid of teaching materials specially prepared for the purpose.

In the Autumn of 1969, a major programme of re-training began in connection with the new curriculum to be introduced into the comprehensive schools in 1970. All head teachers in the country were to attend four-day courses, arranged on a regional basis. Similar study conferences were planned for the spring of 1970 for all teachers in the comprehensive schools - 55,000 of them. Teachers in the upper forms would attend for four days; those working in the lower three forms will only attend the first two days.

The new 1970 curriculum for the comprehensive school involved the extension of modern mathematics teaching and the introduction of English at the third grade. Both of these changes have involved special training for the teachers who have had to equip themselves for new tasks. Radio, television and correspondence courses are being used for this purpose. Altogether, the National Board of Education allocates about 2 million Sw. Kr. (\$400,000) to the planning and production of study material for in-service training. It will be seen that, even leaving aside the special programme for the introduction of a new comprehensive school curriculum, the scale of the in-service training effort is considerable, with about one teacher in 10 attending summer courses of from one to three weeks and an estimated 80,000 teachers taking part in up to five obligatory study days each

year when the schools can be closed while the teachers work.

In-service training and retraining is held to be important for two separate reasons: first, as a means of introducing particular changes in organisation, curriculum and method; and second, as a means of building up the professional self-confidence and commitment of the teachers.

The inertia of the teaching profession is one of the restraints which any concerted attempt to promote innovation must tackle. This is true in Sweden as elsewhere. It is ironical, perhaps, that in Sweden, where the comprehensive principle has most wholeheartedly been adopted, the teachers are themselves fairly sharply divided by type of training, school function, salary scale and professional association. The teachers' unions belong to different trade union groups, which adds to the divisions.

The Swedish authorities have recognised that the introduction of new methods make heavy demands on the teachers. Even with the volume of in-service training which is now undertaken there are complaints from the teachers that not enough is being done to train them in the use of new materials and methods and that the changes they have to face are not being taken into account. Often these changes are subtle, affecting the teaching craft itself, the teacher's feeling of security in his mastery of the craft and the satisfaction which he derives from his work. A part of the training and retraining programme has to be directed at eliminating the fears of teachers on these grounds and building up their confidence and competence in handling new techniques.

Much of the training programme concerns the individualisation of instruction - a concept which any visitor to Sweden soon encounters (and to which reference is made later). Individualisation is one of the primary objectives of the system. ('the work of the school will be focused on the individual pupil ...'). What makes it a matter of day to day concern, however, is the determination to postpone differentiation, streaming and selection to the latest possible stage, and to keep as much of the curriculum as possible common to all pupils throughout the compulsory school from 7 to 16. Even if the centrality of the individual were not stressed as clearly as it is in the stated objectives the practical tasks of teaching in an unstreamed group might be expected to place this in a prominent position. Unless the teachers can be shown effective methods of individualising instruction for a teaching group of 25-30 children of widely differing ability, those who have been accustomed formerly to teaching selected groups are likely to be frustrated by what seems to them the reduced effectiveness of formal class teaching and the consequently lower satisfaction which they will derive from the job.

Some of the pressure for retraining has come from complaints of this kind. Teachers who have not discovered how to provide individually for their ablest and least able pupils within the same teaching group, have encountered discipline problems. The theoretical answer to this has been to advocate a more active and interesting classroom and school environment in which disciplinary difficulties would disappear when all children were individually at full stretch. Hence the emphasis on group methods and on teaching aids, and, above all, on such individualised instructional systems as are becoming available.

The most important and advanced of the individualised instructional systems now coming into use - IMU mathematics - is described in a later section of this report. From the teachers' point of view the question which is likely to arise is whether there is any conflict between the co-operative goals of the school and the pedagogic necessity to individualise instruction. As yet this remains an academic question, though one of which teachers and administrators alike are well aware. The more extensively the curriculum were to be individualised, the more acutely this could bear upon the schools.

Rolling Reform

As already mentioned, Swedish educational administrators believe that the educational system should now move forward into a new phase of development in which curriculum reform should be a permanent, self-renewing condition. On this reasoning, innovation becomes a state of mind and an administrative attitude, not something more or less traumatic which requires a Royal Commission to carry it through.

Royal Commissions, of course, will continue to be used where appropriate. One of the features of the systematic approach to change which the Swedes have adopted has been that reform has been co-ordinated and efforts have been made to ensure that the separate parts of the system are prepared for the consequences of changes in any one part. A Commission is still likely to prove useful where structural changes are needed. Among Commissions now working in the educational field is a major inquiry into the organisation of post-secondary education which is studying the changes which will be required in the light of the explosion of numbers in secondary education and the consequential pressure on higher education. When it is said, therefore, that rolling reform will replace the more formal techniques of the Royal Commission, this mainly concerns matters of curriculum and methods.

Two main reasons are given for the need for 'rolling reform'. The first is that society and human knowledge are changing so fast that any system which remains static soon becomes out of date. The second is that the educational system must constantly seek to innovate in order to rationalise: it must always be under the same pressure as any other large scale enterprise so as to be able to use its human and material resources to the best possible advantage.

A policy of rolling reform means seeking ways of systematising the present processes of revision, relying less on the estimates of teachers and others, and more on the social scientists. Plans are already in hand now⁽¹⁾ for the revision and evaluation of the new gymnasium curriculum. This is known as the LAG project. Some of the thinking behind rolling curriculum reform is set out in a paper on 'Principles for the further revision of the Swedish gymnasium and continuation school curricula' dated 28th June, 1968. This is specifically concerned with the secondary schools' curriculum. The techniques under discussion, however, apply to curriculum renewal generally.

Rolling reform does not mean allowing reform to take place on the initiative of the teachers themselves. "The fact that the Board of Education will in the future play a primary role in the school planning /In contrast to ad hoc Commissions/ should not mean that questions of

(1) Summer 1969.

method are to be attacked solely by teacher-steered reforms. On the contrary, we should strive to develop planning methods with a view to covering the relevant problems more completely and achieving an improved optimal technique in step with development in the social sciences. ...

"A self-evident aspect of revision is that of rationalisation. Every change must be a gain and the results must be reflected in more efficient teaching.

"The principles laid down for this 'rolling reform' ... should provide a pliable instrument for the continuous renewal of a system previously characterised by a high degree of inertia ...

"We must try quickly to obtain an overall picture of how the new system is functioning in relation to the educational aims established with the decision of Parliament in 1964. The object here is to locate the greatest faults and establish where the greatest difficulties are encountered. This, if possible, should be done in such terms as permit the ranking of different problems in priority order. The 'problem sectors' involved can be of various kinds: specific systems of materials or methods, new text books and other materials, more concrete recommendations, administrative measures in respect of joint classes and other forms of grouping, questions relating to in-service training and teaching qualifications, alterations to the time-table and, of course, changes in the actual aims of teaching. If the target set proves to have been too ambitious then it must be lowered; if it is achieved with a wide margin, then we must either alter the target or reduce the time allotted.

"The object must be to illustrate the situation of different subjects as thoroughly and objectively as possible: this can be achieved partly by objective tests of the students' knowledge, but it is at least as important to try to attack the problem in the actual teaching process, e.g. by surveys among teachers and students with other methods. We are, as yet, at too early a stage in the discussion to say whether this should be by interviews, questionnaires, the critical incident method, or similar. ... Such studies could now be of great use, before any less desirable teaching methods and material become firmly established, and before teachers and students can accuse the Board of Education of coming too late. As regards the technical design, it should be possible in the initial stages at least, and under certain conditions, to make use of gymnasium inspectors and consultants in the collection of information. However, it is very important that the work of reform be clarified from the beginning in collaboration with the institution or institutions that are to participate by performing studies."

Central to this approach to curriculum renewal is a close study of the internal function of the school and the teaching process itself. Here, 'the emphasis must be on these important variables, namely: time, principal subject matter, and method'.

The paper continues: "For internal function analysis to give reliable results, it is necessary that general planning models be scientifically evolved for teaching in different subjects. It is

"important also to construct easily used tools to measure, for instance, student attitudes to teaching in different subjects. It is of particular importance to be able to chart how the new forms of work introduced in the gymnasium and continuation school function in practice. To obtain the relevant data for a future analysis of the internal function of the curricula, more consistent planning and application of the curricula will be necessary. This will take the form of local studies at specific schools. ...

"The object is to let each school handle the investigation of a particular line or sub-alternative. ... It is also intended that the working groups at these schools should structure the content of certain subject curricula, so that a study schedule can then be built up in which such aspects as co-ordination, methods and aids are considered in more detail. In this way, the aims of the curriculum can be 'tuned' to the right level.

"The results of such activities will then be presented as a basis for further analyses of the internal function of curricula.

"It is important that the Board of Education penetrate from the very beginning the different functions of the project, and give it a general design that will cater satisfactorily for the demand for topicality, by developing methods of work that make continuous allowances for the requirements of recipients, and of society at large. Experience of planning during the last year suggests an increasing emphasis on the development of new methods in work on the curriculum. ...

"The intention is primarily to evolve certain routine procedures in the different functions of curricula work, to meet the requirements for periodicity. Even if the Board of Education, through its gymnasium inspectors and school consultants, has the means to follow the introductory phase of the new gymnasium and continuation school in some detail, it would be unreasonable to see this as the only instrument for a thorough analysis of all phases and tendencies during the introductory period. And to base future changes solely on the experience of the Board's officers would be to underestimate the actual renewal taking place among teachers 'out in the field'. More methodical analysis, and a better way of channelling the flow of information, is very necessary. We can say quite generally that the demand for rapid changes in the curriculum will increase, owing largely to the increasing mobility of the labour market, and this alone necessitates and warrants a real effort to make work on the curricula pliable. ...

"The demand for 'currency' can be met also by the Board of Education, in accordance with the directive of the Minister, keeping in contact with various reference groups, such as the associations in different subjects, trade organisations etc. To maintain continuous contact with such reference groups is an essential aspect of work on the curricula.

"To meet the requirements of recipients and society at large within the framework of the project, it is necessary to continue with the methods of study applied on a limited scale by the

Gymnasium Commission. It is possible, for instance, within the Board of Education, with the help of the gymnasium inspectors and other officers, to make quick, practical inquiries in order to chart the problems that arise, and also to make larger-scale studies among employers, e.g. in respect of how continuation school students are adjusting to the labour market. ... In this way, the requirements of subsequent employers can influence the design of curricula more directly...

"A principle in planning the project has been that those engaged in the different parts of it shall devote themselves mainly only to their particular sector.

"In planning the project, it was thus considered unsuitable that those engaged in, say, analysis, should at the same time be called on to assess the proposals presented for a new curriculum. The different ingredients of the project break down into what we can call an analysis function, a construction function, and field tests. Other important aspects include consultation with research."

The author goes on to discuss how, when the process of analysis has been completed the actual work of curriculum construction begins. The approach which he outlines is that developed at the University of Gothenburg by Dr. Urban Dahloff and Dr. Erik Wallin in connection with their studies in educational technology.

"On the basis of the material emerging in analysis, the leading curriculum shall give such directives that temporarily engaged experts are able fairly easily, and above all quickly, to produce proposals for a new curriculum in their subject. Secondly, on the basis of what the experts produce, the constructors are to provide a foundation for any experimental activities ... which will then be evaluated by the constructors, and furnish the basis for a final decision on changes in the curriculum. ...

"Changes in the requirements of recipients, and of society at large, will also be channelled through the construction group. With their capacity for goal-analysis ... this group will be able, in the reconstruction of curricula, to exploit innovations suggested not only by life in the schools but also by more general considerations of educational policy. ...

"Owing to the great effort made on the analysis side of the project, the space devoted to field tests has been reduced. The term 'experimental activities' has consciously been dropped in this context. It is intended that the trials held in the future within the project will really be 'field tests' of a given proposal. Such a proposal will in a way already have been tested, in so far as it is the result of very careful analysis, after which it will have been goal-analysed and evaluated by experts in educational technology. For this reason it is intended only to make isolated field tests, and the costs of this should be relatively low."

Not only does this approach rest on models formulated at Gothenburg, it is also being carried out in close co-operation with the university's Institute of Education.⁽¹⁾ Several members of the staff of the National Board of Education who are involved in the LAG project have joined the Gothenburg course in educational technology which has been set up with support from the Board's Research and Development Funds. These include Mr. Cervall, who leads the project.

As will be seen from the diagram showing the system model of educational technology developed in connection with the Gothenburg course (see p. 30) the approach is sophisticated and theoretical, with great emphasis on goal analysis. It covers both the general planning of educational systems and the planning of instruction - in other words it looks at both large-scale and small-scale questions. "Instruction might be defined as goal-directed and systematic modification of behaviour." The goals, principals and dimensions of education, obtained as a product of community planning, must be broken down step by step to be transferred by way of instruction to desired changes in the behaviour of the members of society.

"Not least the development in programmed and so-called pre-produced instruction has given rise to radically changed views on such questions as defining objectives, steering and controlling the quality of instruction. The whole of this process, from the analyses made by the educational planner on the macro level to the construction of the shortest instructional sequence must be well synchronised. We have chosen to call that part of education concerned with the application and development of methods to effectuate this development process 'Educational Technology'. It should already be clear that this field of work has become so comprehensive that a differentiation of the functions can be discerned. The first phases of this process seem to coincide well with the concept of Educational Planning, while the others correspond most closely to what we mean when we speak of Instructional Planning and Instructional Technology.

"The boundary between Educational Planning and the Instructional Planning is often diffused, as these terms are applied to parts of the same process.

"It was on this background that the Institute of Education deemed it urgent to start a university course in Educational Technology. This new course satisfies a great need which is obviously present and also prepares the way for a more comprehensive and systematic view of problems of education and instruction, as hinted above. For several reasons, Educational Planning has been given less scope than Instructional Technology. The course is intended for the growing group of people who, in various ways, are engaged in or will become engaged in one way or another in planning, construction, administration and evaluation of education and training in the public educational system and in the commercial

(1) As it happens, however, the theoretical work by Dr. Dahlhoff on which the working model is based was not financed by the National Board but by funds from the National Bank's Jubilee Fund.

"and industrial sector, as well as in national and local government, different forms of adult education and so on.(1)"

The course is mainly for educational administrators, curriculum experts and industrial training officers and to fit in with their employment it has been arranged in eight units each lasting a week. The intervals between these units are devoted to reading and practical work on the systems in which they are currently employed. The practical work is regarded as of great importance.

Another Gothenburg project - COMPASS (Comparative Analyses of Objectives and Processes in School Systems) - is playing an important part in the LAG exercise. In order to assess the extent to which existing courses fulfil the aims which the curriculum has been given, Dr. Dahlhoff is carrying out an investigation in the Gothenburg Secondary schools. His great concern is with the actual process of teaching which in his view has been often overlooked in discussions of organisation, intelligence and so on. He has shown, for instance, that general statements about streaming or non-streaming are unlikely to be meaningful unless the actual teaching process is considered in detail as well as the overall organisation.

In the COMPASS project, five subjects in grade 2 of the gymnasium are being closely examined. Four times a year information is collected from the pupils and the staff to establish

1. What the classes are dealing with at the time of inquiry.
2. By what methods.
3. What they have been doing since the beginning of the term.
4. What problems they have come up with.

The inquiry goes on to cover teachers' plans for the next period, pupils' attitudes towards methods, subjects, teachers and their school work in general, and the pupils' marks and results in standardised tests. (See Chart p. 36)

Research and Development

It will be seen that the method of curriculum reform outlined in the LAG paper relies heavily on research and development and on the assistance of experts in the social sciences from the universities and teachers' colleges.

It takes a resolutely optimistic view of the extent to which curriculum planning can be placed on a scientific basis. In the confidence it reposes in the social scientists it reflects the efforts made throughout the planning of the Swedish school reforms to build research into the programme at every stage. Most of the Royal

(1) From School Research Newsletter - 1968: 1, Planning and construction of a university course in Educational Technology, National Board of Education, Stockholm, Sweden.

3. EDUCATIONAL PROGRAM DEVELOPMENT

3.1 PLANNING

3.1.1 Define the purpose, scope, and objectives of the program.
 3.1.2 Determine the target audience and their needs.
 3.1.3 Establish a timeline and budget for the program.

3.2 ANALYSIS

3.2.1 Conduct a needs assessment to identify the specific requirements of the target audience.
 3.2.2 Analyze the current educational landscape and identify gaps or areas for improvement.
 3.2.3 Review existing programs and materials to determine what can be reused or adapted.

3.3 DESIGN

3.3.1 Develop a curriculum framework that aligns with the program's purpose and target audience.
 3.3.2 Design learning activities and materials that engage learners and promote learning.
 3.3.3 Create a detailed lesson plan or syllabus for the program.

3.4 IMPLEMENTATION

3.4.1 Recruit and train educators or facilitators to deliver the program.
 3.4.2 Launch the program and monitor its progress.
 3.4.3 Provide ongoing support and resources for learners and educators.

3.5 EVALUATION

3.5.1 Establish a system for collecting data on program outcomes and learner progress.
 3.5.2 Analyze the data to assess the program's effectiveness and identify areas for improvement.
 3.5.3 Report on the program's performance to stakeholders and use the findings to inform future program development.

3.6 MAINTENANCE

3.6.1 Regularly update the program content and materials to reflect changes in the field or learner needs.
 3.6.2 Seek feedback from learners and educators to make continuous improvements.
 3.6.3 Reassess the program's effectiveness and make adjustments as needed.

Commissions, which planned the different phases of the reform of the educational system, incorporated programmes of educational and social research. Swedish politicians and administrators have gone further than their counterparts in most other countries to form close links between the research workers and the decision-makers.

In 1962 a new bureau - known as L4 - was formed in the National Board of Education to plan and supervise educational research and development. 'R and D' funds allocated through L4 now amount to about 10 million Sw. Kr. (\$2 million) a year, having risen steeply within the last few years from an original figure of about 2 million Sw. Kr. (\$400,000).

L4 is a small unit led (at the time of writing: 1969) by Nils-Eric Svensson and Eskil Bjorklund. It does not undertake any direct research itself. Instead, it plans the distribution of NBE research and development funds mainly to universities and research institutes. As these funds represent the overwhelming preponderance of the money available for educational research and development, its influence is obvious.

According to Professor Harry Passow of Teachers' College, Columbia University, who recently carried out a survey of Swedish educational research activities and the part played by Bureau L4, (1968), the Bureau "appears to have a web of close relationships with the various research institutes wherein the research and development work is actually undertaken, with the functioning bureaux and offices of the National Board of Education, with the Ministry and its Commissions, with practitioners in the field, with publishers and materials producers, and with other research founding agencies such as the Social Science Research Council. When direct access to the Director General of the NBE is added and when one considers that basically Bureau L4 is two individuals, the growth of this bureau's influence becomes even more significant. Quite clearly, Bureau L4 is not in business to distribute mimeographed research reports, rather, it views its mission as contributing directly to the determination of educational policy and to decision-making.(1)"

There are two ways in which projects are chosen for support. In many cases the initiative comes from the university or the research institutes. L4 is likely to back a promising project which offers itself. The network of informal relationships is such that the Bureau is likely to be able to keep well informed about up-and-coming people and ideas worth supporting. Many of the likely project leaders are themselves in consultation with other branches of the National Board of Education and there is a free flow of information about on-going curriculum reform and innovation which keeps the research workers in touch with thinking inside the National Board.

In other cases, the Bureau will 'solicit' proposals when it has a clear demand for a particular kind of work to be undertaken in connection with some work within the Board. It is obvious that there

(1) Bureau L4 and Educational Research and Planning in Sweden.
A. Harry Passow, NBE School Research Newsletter, 1968:9.

It is obvious that there will be many occasions when a project takes shape by a combination of these two methods.

To assist in weighing up the projects which are put forward, the Bureau has the assistance of an advisory Committee and a Consulting Committee, the latter body consisting of the heads of the various research institutes plus a number of influential co-opted members, being the more important in determining policy. According to Professor Passow,

"Since all of the research and development is actually undertaken at the research institutes, the heads are directly involved in the preparation of the budget, in the determination of which problem areas will be tackled, and to a certain extent, where projects will be placed. True, this is done in an advisory capacity but it does represent a relationship between the Bureau L4 and its project-operating institutes which is quite unique. In the context of the Swedish system, this appears to be a positive relationship and may help short circuit the delay in developing, funding and implementing proposals."

L4 has the responsibility for providing a policy framework within which the National Board can support research and development, strong enough to yield the positive advantages of coherence and co-operation, yet not so intrusive as to impose any kind of stultifying uniformity. It has, as it were, to orchestrate the themes which emerge from the independent activities of original minds in the universities and institutes, in harmony with those which come out of the practical activities of the National Board. While it is clearly not possible to draw a hard and fast line between pure and applied research in education, the general assumption is that to be eligible for support from L4, a project should be directed towards solving questions fairly directly related to the needs of the schools.

In addition to the support of work at universities and research institutes, money is also channelled into less obvious social science-based development projects such as those already undertaken by the National Board of Education in connection with curriculum reform. These include the new 'development groups' set up by a few local authorities, among them Malmö (see p. 38). So far this local activity is on a very small scale but may be expected to grow considerably if the early experiments prove successful.

Systems Approach

As more funds have become available since 1964 the policy of NBE has been to concentrate research and development efforts on the process of instruction and in particular to develop a systems approach to curriculum development. This has meant giving support to projects using a Methods-Materials-Systems approach. Much of this work bears on the individualisation of instruction which is seen as one of the central problems in the development of mass education at the primary and secondary stages.

It is the National Board of Education's expressed intent to "improve the school by systematising and instrumentalising the instructional approach." It aims at designing "prototypes for

"instructional systems and at the same time to develop, in so far as possible, models for more and more production-oriented research and development."

In a memorandum on the development plans for 1968-69, the National Board of Education wrote at some length about the direction of the development work which it was intended to support and shows how heavily committed it is to the instructional systems approach.

The memorandum stated(1): "Naturally, the steps taken to reform our schools depend largely on the views we hold about what is actually meant by instruction. The traditional view - which is now beginning to be questioned - implies that the main role of the teacher is to transmit information. Concepts like class and lesson are fundamental for our present instruction model. The task of the teacher is conceived as to organise the pupils' learning mainly by giving lessons (class instruction).

"In Sweden the teacher's work is usually defined as equivalent to a certain number of lessons including preparations (teaching duties). One of the disadvantages of this way of measuring a teacher's work is that it may easily give the impression that the most important thing is to give lessons, that the task is to communicate a certain - both informative and character training - message and that, if this is done conscientiously, it cannot be helped if some pupils fail to acquire knowledge or learn skills as well as might be wished.

"The unit, the building block, according to this traditional instruction model, is the lesson, a period of instruction led by a teacher. The class-and-teacher thinking, however, leads to difficult, laborious forms of work; the teacher has a rule always to take the whole class or group into consideration. The demand for the individualisation of instruction within the framework of the class will usually be difficult to satisfy. This model does not pay sufficient attention to the fact that the fundamental point in instruction must be the learning activities of the individual pupils.

"The class and lesson model means that the planning of instruction is largely the responsibility of each individual teacher. Each class works during each lesson according to the plans made for that lesson by the teacher of the class. For most teachers and pupils this can hardly give the desired quality and the desired differentiation. The class and lesson as a planning unit must therefore be regarded as being both too large and too small. The planning of instruction should be directed to the activities of the individual pupils. In order to make this possible it is necessary to make use of more resources than are available with the class as a planning unit. The planning must therefore be done in a wider frame of reference than the class.

"What will an alternative instruction model look like? Experience of research and development ... suggests the following, perhaps slightly exaggerated, comparison between two instruction models.

(1) Educational Research and Development in Sweden. Plans for 1968-69. NBE School Research Newsletter, 1967:2.

Instruction Models

<u>Aspect</u>	<u>Present Model</u>	<u>Alternative Model</u>
Planning unit	Class; lesson	Pupil, groups of pupils; larger sections of courses
Integration, systematization, planning	Mainly by the individual teacher; often not best combinations of media; often great qualitative differences	Largely already at the construction stage; systematically tested combinations of media; effects of use predictable
Construction of instructional material	Usually only textbook; without systematic production and testing	Instruction systems; systematic construction and testing
Teacher function	Primarily information communicator	Primarily tutor, "stimulator", work leader
Personnel structure	One teacher per class/group and lesson, with sole responsibility	Teams of teachers, e.g. with senior masters, teachers, assistants, etc.
Realization of changes	Often slow, with uncertain effect	May, in principle, be more rapid and certain
Individualization	Usually little	May be made as comprehensive as desired
Pupil activity	Often little (except for homework)	Great (study work in school)
Learning effect	Varying, difficult to measure	Each pupil's progress may be followed continuously

"In the opinion of the NBE, one of the principal aims of the educational reform work is to develop and test the alternative model of instruction. This model is expressed here in general terms. It is, of course, much easier said than done to change school instruction in the way that is outlined here. If - or more correctly, perhaps, to what extent - this can be realised, depends, naturally, on how far we are prepared to devote our resources to endeavours in this direction.

"On principle it is possible to construct instructional systems of the type outlined here for a school subject or group of subjects or for a certain part thereof and for a number of annual courses or parts of such courses. In such a case the content and forms of work are defined and ordered to make a well-planned system. Strict programming, in the accepted sense of the term, of pupil activities cannot be considered except in very limited sectors, e.g. training skills. The system must be flexible and aim in the first place at creating methods by which pupils can work independently, alone and in groups alternatively. The scope for group work, discussion, lectures, laboratory work, demonstrations and other 'social' situations, etc., is made within the given framework as large as is considered necessary in each individual case. The work of construction is extensive: the purpose is to arrive at a system in which the work of pupils, teachers and other personnel, and the utilisation of material resources of different kinds (media combinations) best serve the various functions of instruction (e.g. motivation, planning, presentation, directing attention, problem solving, feed-back and evaluation).

"The task of the teacher will be mainly that of a tutor, 'stimulator', and, to a certain extent, the governing, responsible administrator. The communication of information will be by way of the different learning arrangements included in the instructional system. In principle this will allow for a large measure of individualisation, and it will thereby create scope for a strengthening of the relation between the teacher and the individual pupil, the teacher will have more opportunity of devoting himself to the most important educational tasks.

"Here instruction is planned to a great extent partly in the constructional stage, with a large number of interchangeable alternatives for different sections of a course, and partly in the different schools (in collaboration with senior masters, teachers, assistants and the pupils themselves).

"Since central parts of the courses will be tried in an experimental way so that their learning value can be determined, it may be possible to guarantee that certain goals, considered essential in the curriculum, can be attained by all pupils. ..."

The memorandum goes on to describe the stages in a project involving the development of teaching materials summarised in a simple flow chart:

Plan- ning	Pre- tests	Ana- lysis	Con- struc- tion	Field test- ing	Prod- uction	Train- ing	Use
---------------	---------------	---------------	------------------------	-----------------------	-----------------	---------------	-----

"The fundamental point in a systems approach", the memorandum concludes, "is that all links in the chain of production are developed within the framework of the same project.

"The main thing is to create direct and easily accessible communication lines between the goal definitions of the curricula and the various media combinations and teacher contributions which facilitate the pupils' learning activities. All links in the chain must fit into each other, and stand up to the demands made: if a pupil does not learn what is required of him, it is the fault of the system, not of the pupil."

As already indicated, most of the research sponsored by the Board of Education through Bureau L4 is carried out at the research institutes in the Universities and teachers Colleges.

A short list of projects now in hand is appended at the back of this report to give some impression of the range and character of the programme. The examples to which reference is made in this report are taken from Gothenburg and Malmö but these are, of course, only a small part of the total research effort.

Individualisation

The individualisation of instruction is the recurring theme. "One gains the impression that those projects which deal with the basic problems of individualising and differentiating instruction - whether in terms of diagnosing and analysing those differences or developing materials and methods for meeting them - are at the heart of the planning needed to realise the school reforms which have been promulgated over the last few years.(1)"

The outstanding example of this approach - quoted to a visitor wherever he goes - is the IMU Mathematics project at the School of Education, Malmö. The project was begun in 1963 and the materials are now being field-tested on a large number of schools.

So far the main emphasis has been on producing material for grades 7 to 9 in the comprehensive school (ages 13-16), but preliminary studies have also been carried out with younger and older children.

The decision to develop materials for this purpose originated in the National Board of Education shortly after evidence was received of work on programmed learning for mathematics in the United States in the early 1960s.

The project has four aims:

1. to draw up and test self-instructional teaching materials in mathematics,
2. to test suitable teaching methods for the use of the material,
3. to discover in what way the students should be grouped and the teachers used in order to obtain the maximum effect from the material and the method,

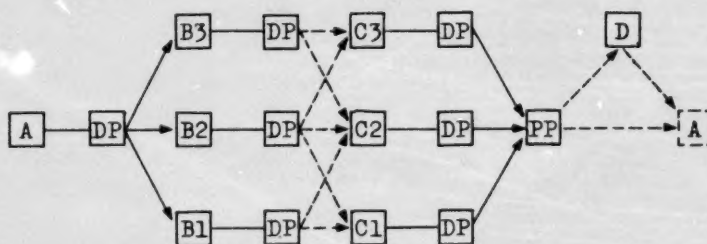
(1) Passow: op cit.

4. with the aid of the constructed material to measure the effects of entirely individualised instruction.

The project, in fact, combines three different types of innovation. First of all, it demands a review of the mathematics syllabus and the revision of the content in line with 'modern mathematics'. Second, it demands individualisation - the opportunity for pupils to work on their own, at their own pace. And third, it demands a new approach to the use of physical and human resources, new ways of using staff, flexible class sizes, and a new attitude on the part of teachers.

The material for the three school years of grades 7 to 9 is divided into nine sections known as modules. Each module provides work for a third of a school year, in the form of six to eight components - work-books of from 50 to 150 pages each. Each module, however, is provided at three levels of difficulty so that a pupil can move at the speed and degree of complexity suited to his ability.

The student is piloted through the course by a series of diagnostic tests taken after each component. Thus all take component A at the start of the course, which lasts three or four weeks. They then take a diagnostic test, on the basis of which they go on to component B at the appropriate level (B1, B2 or B3), and so on through the module. Switching from one level to another is quite frequent and the units of work are arranged in such a way as to facilitate this.



Sketch illustrating the principle of a module. DP = diagnostic test. PP = prognostic test. A in the frame on the extreme right marks the beginning of the next module.

The components each last about a month which means that the teachers have about 10 occasions a year to help students choose the right level of work for the next stage. "In this way and also because students are relegated at intervals to 'zero level' the difficulty level of the material to the students' actual performance and thereby reduce the risks of students being assigned once and for all to a particular level. Component D contains material for 'individual work', that is to say, more independent tasks. The better students choose one or more such tasks themselves and receive material and suggestions for the tasks which they will plan and carry out by themselves.

Reports on the tasks take place individually or in the form of a little 'tutorial' for those students who have chosen the same task.(1)"

The scheme offers, in effect, about 10 million permutations and combinations in the attempt to satisfy individual needs.

An unusual feature of the plan is a pamphlet for parents to help them understand what is happening and to introduce them to the new mathematics which their children are studying.

The material has now been under test since 1966 when the first version was tried out in a school with a small test group of 75 students. On the basis of this, the work-books were revised: all exercises with a 'solution frequency' of less than 80 per cent were changed or rejected. (This reflects the strong PL influence). Testing of the second version began in 1967 with a larger test group of 300 students.

The third version is now being tested in some 300 classes: 11,500 students are taking part, of whom some 2,000 are being investigated closely.

A visitor to a Malmö school where the material is being used would find these classes - 80-90 children - may be supervised by two teachers and one auxiliary (unqualified). (Other combinations of classes may be taken by other combinations of teachers and auxiliaries). A teaching group of 90 will be seated in a school dining hall or assembly hall. Each child will have his own assignment, periodically seeking assistance from one of the adults present. Some will be doing a revision exercise using small tape-recorders and earphones. Others will be doing diagnostic tests. A few will be sitting doing nothing, looking rather bored.

The team teaching approach and the big class organisation has been adopted for a number of reasons:

- students' work must be frequently checked and tested
- teachers have to keep careful notes on the progress of individual students
- there is a lot of material to cope with
- this means a lot of routine clerical work for which an unqualified assistant is eminently suitable
- "the majority of the teachers and some of the students considered that the students' motivation could be further stimulated if individual tasks could be replaced from time to time by group activities".

The organisation of staff and students in this pattern leads to financial savings. It is estimated that the money saved by the use

(1) Some Facts About IMU, Hastad, Svensson and Oreberg, Department of Educational and Psychological Research, School of Education, Malmö, 1968.

of unqualified auxiliaries is sufficient to cover the extra costs of the expensive work-books - the cost of materials is about \$20 a head, a year - and also making a real saving. This reflects partly the high level of teachers' salaries in Sweden and the differential between the teachers's pay and that of the assistant. The following description of how a typical lesson is prepared and conducted is from Some Facts About IMU by Hastad, Svensson and Oreberg.

"1. The lesson is prepared during a conference held by the teaching team to determine which tests will be held, what group instruction will take place, who is to be responsible for the group instruction, which material is to be distributed to which students, etc. The assistant takes notes throughout the conference.

"2. The group instruction, if any, is prepared by the teacher nominated.

"3. Before the lesson commences, the assistant produces all the material required.

"4. During the lesson the assistant is busy distributing and collecting material, supervising students carrying out diagnostic tests or solving problems, noting the students' progress through the course, the extent of their homework, checking their attendance and so on. The assistant should be sufficiently familiar with the material so as to be able to answer simple questions posed by the students. In general, however, she will refer the student to one of the teachers. Meanwhile, the teachers circulate among the students, helping those who have got stuck, seeing to it that the students work carefully and in accordance with the instructions laid down, giving the students encouragement and spurring them on, discussing the results of diagnostic tests, helping the students to choose suitable sections for revision, etc. One of the teachers may be busy on group instruction.

"5. After the lesson the assistant arranges all the material.

"6. Before the next conference the assistant corrects the students' diagnostic tests and enters up all the data on the students' progress, etc. The scope of the assistant's work is normally subject to local circumstances, but the following tasks are probably her most important ones.

" - To attend the lessons

" - To be responsible for the material

to ensure that the material is stored neatly so that it can be clearly surveyed

to select the material required before the lessons

to maintain a complete stock by making the necessary orders for replacement

" - To register the current work of the students

- " the students' progress in their studies (once a week)
- the students' homework (once a week)
- results of the diagnostic tests
- results of prognostic tests
- booklets currently used by the students
- " - To register student data
 - previous marks
 - test results
 - contacts with parents or guardians
- " - To correct diagnostic tests
- " - To copy out and make stencils of material produced by the teachers for group instruction
- " - Clerical duties of various kinds, including keeping the minutes at conferences, notes on group instruction, notes on absence.

"7. At the next conference (a minimum of 1 conference per week per big class is necessary) the teaching team discuss their experiences, go through the results of the diagnostic tests, decide on measures to be taken following the results, for example individual revision or group instructions, survey the students' progress in their studies, decide whether any students require further encouragement, help, etc. The following questions are dealt with at the majority of conferences:

- " - How far have the students progressed with their work? How much homework have they been doing? Do any students need special homework?
- " - How have the diagnostic tests turned out? Which students need to revise their work?
- " - Ought there to be group instruction next time? What type of group instruction? Who is to organise it?
- " - Are there any students who have nearly completed their booklets? Which booklets should we recommend for their next phase?"

In addition to the IMU project there are others using similar techniques being carried out in the teaching of English and German.

No one who talks with Swedish officials about innovation can doubt that great store is set by these schemes. Although the IMU project has been carefully researched, it is too soon to evaluate it fully. Those most directly concerned with it tend to be more cautious in what they claim than the central administration, which seems at times to have

decided already that necessity demands that it shall live up to the hopes placed upon it.

It seems that this project, like others relying on programmed instruction through a single medium - and in this case, the printed page - makes considerable demands on the students' powers of perseverance. The pupils' interest is strongly stimulated at the outset. The curve rises, then it begins to fall. There is no doubt that it is daunting for a visitor to enter a classroom at 8.15 a.m. to be told that the 90 children sitting at their desks working at their assignments with more or less enthusiasm were starting a self-instructional lesson which would last for one hour and 40 minutes. It would become still more daunting if the rest of the curriculum were being similarly individualised.

This raised one of the minor conflicts between objectives which must arise quite frequently. The long, double period was the logical outcome of a policy laid down by the National Board of Education to improve the pupils' study technique and powers of independent work. Chopping the curriculum up into short periods, with time wasted in between is held to militate against sustained and purposeful study. But long periods of unbroken study may in themselves conflict with the aims of individualisation, if it proves difficult to sustain motivation for individual study on IMU lines for so long a period on end. It may be that the a priori reasoning in favour of longer periods of study is being challenged in this respect by experiment.

As to individualisation as such, it seems the IMU project has started from the premise that the work should be made as fully independent of the teacher as possible - the statement of aims uses the phrase 'entirely individualised instruction'. It must strike some observers as another paradox, that this attempt to go the whole distance in the direction of self-instruction should take place in a school system which is particularly well endowed with well qualified teachers. The explanation is not wholly economic, though the rational use of resources is recognised as of great importance. It is more likely to stem from the theoretical basis of the Methods-Materials-Systems approach which aims to make learning depend as little as possible on the intervention of the class teacher and as much as possible on the design of the 'super-teachers' responsible for the system as a whole.

It could be that this assumption is coming to be questioned, as experience challenges the attractive but essentially naïve belief that there can be a 'best' method of teaching which can be universalised through a 'best' set of structured, individualised teaching materials.

The interesting point of development may be the way in which the more active participation of the teachers is combined with the use of the new instructional materials - not only by general tutorial activity but from time to time in more orthodox forms of group teaching and activity.

The IMU project - as the prototype of the more ambitious attempts at individualisation - again underlines the need for the retraining of teachers. As the earlier quotation from Bjorklund and Svensson made clear (pp. 35-38) this goes to the heart of the matter. Individualisation presents a frontal challenge to the traditional role of the teacher.

"Good instruction has up to now been considered to be synonymous with good teachers. The teaching function rather than the learning function has been considered to be the essential factor in education. In the present development in this respect the emphasis is shifting towards an increased interest in the pupils learning activities. Accordingly, it becomes more and more accepted that the teaching ability is to be measured not by what the teacher does but by what happens to the student and how he ultimately performs. In addition, the requirement today is that the instruction should be individualised so that each pupil is given optimal possibilities for advancement in his school work from his own current level of knowledge and ability to higher levels. A general application of the ordinary class instruction conducted by the teacher from his desk is obviously neither efficient nor rational.(1)"

When asked about this - the size of the revolution in thinking which is demanded - Swedish administrators will point to the big programme of in-service training now undertaken (see p. 22) but concede that as yet the majority of teachers are unaware of the magnitude of the changes demanded. Some who have faced the challenge have responded to it with enthusiasm. Others have faced it and withdrawn to cultivate their traditional skills. But for the most part, even in Sweden, where the level of concern is high and the direction of advance is clear, it is still not difficult for most teachers to remain oblivious of what researchers mean when they talk about Methods-Materials-System.

If an unduly wide gap exists between the innovators and the practitioners, the limitations this must impose are obvious enough. According to some research workers it is also hindering research and development. Some teachers have become reluctant to answer questionnaires and supply information needed for research projects.

It is in this connection, perhaps, that work at the local level - teacher-led development which clearly has a low place in the hierarchy of innovation in Sweden - may come into its own.

Local Development Groups

One way in which the innovators have sought to spread the message of 'rolling reform' has been by setting up a small number of local development groups, based on some of the more progressive local authorities. Since 1964, Malmö has been one of these local authorities. Under the leadership of Mr. Lars Kjellman, the director of education, and his staff, the city has established a series of projects which include team teaching, the integration of social studies, experimental methods of study training and the use of other new teaching methods and teaching aids.

Valuable knowledge and experience is being gained about the practical applications of new ideas such as team teaching. A visitor to a Malmö comprehensive school may find these classes together in a lecture room watching a film strip and listening to a tape on a topic on current affairs. From this the classes will move to their own rooms with individual or group assignments. These will require them to use

(1) E. Bjorklund, Educational Innovation in Sweden, 1966.

the school library and resources centre, collecting stencilled working papers and, if necessary, drawing on further material on tape and film strip. At a later stage the groups will be reassembled to collate their separate activities and share their experiences.

The development work is focused on the main objectives laid down for the schools and is aimed at making a reality of the educational reform. Much of it is closely related to the retraining of teachers but because it is locally directed and teacher-led, it has certain advantages over other forms of in-service training. Having started in only a few schools, the scheme in Malmö has now been extended to all the city schools, in close co-operation with the Malmö School of Education.

Some 20 educational advisers are working in the Malmö comprehensive schools, spending part of their time as teachers and part as consultants for particular subjects or stages of education. The development groups are financed jointly by the municipality and the National Board of Education. It is beginning to be recognised that there will soon need to be a revision of the financial relationship between central and local government because the present central government grants, being directly linked to teachers' salaries, discourage local authorities from exploring more rational uses of resources.

One of the practical functions of the Development Group is to highlight technical restraints of this kind.

An incidental advantage of the local authority development group is that pedagogic experimentation may also lead to more adventurous administration in other respects - as for instance in the design of school buildings which both permit and encourage progressive teaching methods. This has been the experience at Malmö where new school building is reflecting new teaching methods, and in addition, is obtaining better value for money.

At this grass roots level there is a certain amount of reserve about the impact of 'innovation from on top' - the local administrators noticeably identify with the teachers rather than with the social scientists who inspire the central administration. There is a clear understanding that if you attempt to go too fast with innovation the process is self-defeating. This can be interpreted as a certain diffidence about the presentation of fully developed systems. Malmö is one of the places where IMU is being tried out, not without quiet resistance from conservative-minded teachers. At the local level there is far more likely to be an understanding that teachers need to be made to feel that they themselves are part of the innovatory process - "we must try all the time", someone observed, "to make the teachers feel this is something they are doing for themselves, not something coming from on top".

It is also in the localities that teachers and local authorities can talk and listen to each other - an essential element in radical innovation if teachers are to be convinced that new methods do not threaten their professionalism. It is not a question of rejecting systematised teaching materials, but it does suggest a preference for curriculum material which can serve, as someone put it, as bricks for the teacher to build with rather than a whole prefabricated structure.

PART III

CONCLUSION

Innovation in Swedish education is being organised with a skill and systematic efficiency which cannot fail to impress visitors from less highly organised communities. Any conclusions which are reached are therefore less in the form of criticisms or commendations than part of an attempt to identify some aspects of the Swedish educational scene which raise wider questions for others interested in the organisation of change in the educational system.

Objectives

This must be the starting point for any concluding discussion. The Swedish system relies heavily on the analysis of objectives. At successive stages from the education acts down to the detailed curriculum the relevant objectives are set down and policy is based on them. Within the technique of innovation itself there is a determination to use the methods of management by objectives. In everyday conversation with teachers, administrators and research workers it is common to hear people acknowledge that the setting of objectives is a political or quasi-political responsibility, separate from the executive functions of administration and teaching. In fact, the idea that the community can, through its political institutions, lay down the educational objectives and leave their interpretation to the school system, has been firmly and successfully instilled into the world of Swedish education.

The question which the outside observer must ask is whether reality altogether corresponds with this ideal.

It is fairly clear that in a society which has multiple aims, the aims of education are also bound to be varied, and, in all probability, conflicting. This seems to be illustrated in Sweden by the attempt to dedicate education to two separate objectives - the co-operative ideals of a society which would like to be more egalitarian, and the aims of individual development and self-fulfilment.

To point this out is not to indulge in sophistry or to play with words. It is to question whether the objectives are stated as clearly as they are conventionally believed to be. The directions in which they point, though not identical, are seldom diametrically opposed. What this means is that the way the objectives are interpreted is all-important, and to suppose otherwise would be to take an over-simple view.

Moreover, if it is acknowledged that in a plural society, there will always be inherent limitations on the extent to which clear objectives can be analysed and adopted, then it suggests that Swedish experience in this respect is more important for the myth which has been built - successfully - around it, than as an example of how to divide public and professional interests in educational innovation.

Of course, this makes it no less functional in the Swedish setting, though it suggests that sooner or later the incompatibility between individual and corporate objectives will have to be faced. At the present the assumption is that these can be reconciled by the schools in the way they interpret the official policy. This can still be done at this stage within the present framework. It is still possible to call on one policy (individualisation) to counter the pedagogic problems raised by the other (non-streaming, non-differentiation). What has still to be faced is the outcome of a really successful policy of individualisation, vis-à-vis the whole character of the school as such.

Centralisation

It is clear that the Swedes are feeling for ways of making their system less centralised, and among the reasons for this is a belief that this is necessary to release initiative at what may be called the grass roots level.

How Swedish centralism is regarded will depend - to some extent at least - on the eye of the beholder: both the present writers have experience of educational systems in which the power of decision and innovation is much more widely distributed. It is clear what the advantages of central control are. 'When father says "turn" we all turn'. The Swedish Ministry and Board of Education, staffed by skilled experts, is in a position to make things happen. The thoroughness with which the Swedish educational reform has been carried through is eloquent testimony to this. In a relatively small homogeneous country there are clearly limits beyond which it would make no sense to decentralise.

All this having been said, however, it is also easy to see the less favourable consequences of centralised control - particularly in regard to innovation in curriculum and teaching methods. The pressure to change comes from the top. The individual teacher is at the receiving end of a new orthodoxy rather than being encouraged to exploit the creative insights which he derives from his own teaching.

This is recognised by many Swedish administrators in Stockholm - who quote the local development groups (like that at Malmö referred to earlier) as evidence that the point is taken - but it may still be doubted whether in so closely controlled a system the full potential of local initiative and enthusiasm will be realised. This clearly has a direct relevance to the in-service training of teachers. If, as seems likely, this is at its most effective when linked with the active process of curriculum reform and the development of new teaching material, there is still a long way to go.

In Sweden, as elsewhere, innovation makes heavy demands on the teachers themselves who are more likely to embrace new ideas if they are actively participating as valued professionals. There is no reason to suppose that Swedish teachers are more stubborn in resisting change than other teachers, but any major change in educational policy is likely to leave many teachers unpersuaded and this has been the Swedish experience. When this lack of enthusiasm is institutionalised into a tension between the periphery and the centre, it assumes another dimension. (In less homogeneous countries than Sweden, of course, other kinds of local loyalty might be involved.)

More specifically, Swedish centralism raises financial questions about local administration that the Swedes themselves are seeking to answer. The particular method by which the central government pays its 60 per cent share of education costs is under criticism. Being closely tied to the cost of teachers' salaries, it may distort consideration of new teaching methods which might, for example, require fewer teachers and more equipment.

Also, the teachers must tend to look to Stockholm rather than to the locality as their real employer and source of promotion. And not only the teachers: the method by which senior local administrators are appointed is open to the same questioning. For example, the Malmö director of education is, technically, appointed by the King in Council. All this may follow from the slow process of reorganising local government and reducing the total number of local education authorities. But the Swedish experience may not be without its value elsewhere.

Another aspect of centralisation now under discussion in Sweden concerns the method by which the Government should ensure the production and distribution of educational materials. The official policy is to make public funds available for investment in publishing (using the word in its widest sense) and the Government has bought a share in a publishing house together with the local authorities.

The importance of ensuring production, given a strong belief in the Methods-Materials-Systems approach, is obvious enough. How to do this is a question which has exercised curriculum reformers in many countries. Various forms of sponsored publication are possible, of which state publishing is only one. There can clearly be ideological considerations, which may lead some to favour public enterprise in this field as strongly as others will oppose it. The Swedes make it clear that they assume that, for a while at any rate, the State publishing house will only have a small share of the total turnover of educational publishing. But whichever ideological view is taken, the link between a State publishing house and a highly centralised system would become an obstacle to fruitful innovation if it literally gave an imprimatur to new orthodoxies, and restricted the choice of materials available to the schools.

Research and Development

The third aspect of Swedish innovatory technique in education which stands out is the importance given to Research and Development. To some extent it is inevitable that this should tend to be somewhat exaggerated in any description of "rolling reform" as an administrative concept. But any conclusions about Swedish practice would have to stress Research and Development and the faith which is being placed in the social scientists. In this context, this amounts not only to faith in what the social scientists can do now, but also in what they will develop the tools to do in the future.

Here, of course, is an area in which opinion will vary from the more sceptical forms of agnosticism to the more sublime expressions of faith. But this reliance on the social scientists to produce quasi-scientific prescriptions for the curriculum, like the centralised administration, must have an important bearing on the role and function

of the practising teacher. It could be argued, in fact, that the more completely the faith which is being placed in the social scientists is vindicated, the more the present role of the practising teacher is being undermined.

Certainly one of the outstanding tasks is to find ways of contributing to the professional development of teachers while at the same time drawing on the full range of skills which the social scientists have to offer. The involvement of the teacher lies at the centre of the process of curriculum renewal - because what is being aimed at is a change in the whole complex set of relationships which go to make a school, and these depend largely on people, not materials. The materials go a long way to induce and to monitor the changes in social relationships, including the change away from authoritarian attitudes on the part of the teachers. But just as there is more to education than instruction, so there is more to a school than a set of learning systems.

APPENDIX

National Board of Education
Research Planning Bureau (L4)
Stockholm, Sweden.

School Research Projects
1968-69

	Start year	Continues according to present plan until	Esti- mated costs 1968-69	News letter No.
<u>Instructional Conditions</u>				
Job analyses: teacher training, concerns lecturers in methodology, tutors (and heads), for drawing up educational programme	1967	1971	225	1968:13
Social upbringing: ages 7-16, mapping intended to construct teaching spec. devised to train ability to co-operate, resistance to propaganda, etc.	1967	1971	195	1967:9
Adult education: mapping of adults' study requirements and conditions, intended to draw up effective instructional methods (2 projects covering different fields under way)	1967	1973	150	1967:11
Goals and methods for 6-year olds: analysis of goals, mapping of present nursery school programme in relation to goal analysis, testing of new elements and methods (2 projects covering different fields under way)	1968	1977	100	1969:3
Children with defective sight: registering of problems, attempts to draw up integrated course material	1968			

	Start year	Continues according to present plan until	Esti- mated costs 1968-69	News- letter No.
<u>Instructional Processes</u>				
Systematic instructional analysis of teacher and pupil behaviour, intended to bring about more efficient training programme for teacher candidates	1964	1972	170	1969:2
ITV: construction of models for teacher training using TV as an educational technological component system (2 projects covering various fields under way)	1963	1971	290	1967:8 1968:18
ADL: concerns construction of systematic training programme for the severely mentally handicapped	1968	1970	65	1968:8
Gymnastics: mapping of organisation of instruction in order to define improvements	1968	1970	70	
KUMPAN: development of method to register the forms and effects with which various courses planning phases are treated	1968	1971	140	
SIFON: development of methods for guiding and measuring the instructional processes in the lower forms of the comprehensive school	1968	1971	50	1968:20
VGL: development of methods for guiding and measuring of effects in schools with groups of varying sizes and team teaching	1968	1973	20	

	Start year	Continues according to present plan until	Esti- mated costs 1968-69	News- letter No.
SESAM: independent work operated by pupils with multi-component materials: testing of study materials and an organisation with individual curricula	1968	1973		
Literature reading in the Higher Secondary School: experiments with new forms of literary instruction	1968	1972		
<u>Effects of Instruction</u>				
GPU: construction of better methods for marking and admission to Higher Secondary Schools	1964	1970	95	1968:5
Youth in Gothenburg: comparing the effects of the senior forms of the Comprehensive School with earlier types of schooling for corresponding age groups	1963	1971	45	1968:14
Adjustment, behaviour, achievement: a study of pupils ill-adjusted to school life in an attempt to define improvements	1964	1976	200	1968:17
Maturing process: describing variations in the maturing process in children aged 9-16	1964	1970	25	1967:12
Study techniques: construction of group tests for measuring independent judgement and productive originality	1968	1971	55	

	Start year	Continues according to present plan until	Esti- mated costs 1968-69	News- letter No.
Discernment in studying: the construction of tests as a basis for discernment in studying at county colleges (folkhögskolor)	1967	1970	45	
Individual statistics: analysing links between home background, school structure, choice of studies, school results, etc.	1967	cont'd	45	1968:16
KUL: the development of methods for the qualita- tive evaluation of teacher training	1968	1974	100	
The effects of marks and methods of work: the importance of various rewards for the pupils' choice of goals, wish to achieve, satisfaction with results, etc.	1968		45	
<u>Development of Systems</u>				
IMU, Mathematics, ages 14-16	1963	1972	670	1968:12
IMT, German, ages 14-16	1965	1973	440	1967:3
IME, English, ages 14-16 (2 projects covering different fields under way)	1965	1970	470	1966:27 1969:4
Civics, ages 14-16	1967	1970	160	1968:19
Religious knowledge, ages 11-13	1967	1971	170	1968:2
SAG, History, ages 17-19	1965	1973	220	1968:11
Education, Teacher training	1968	1972	140	1968:15

	Start year	Continues according to present plan until	Esti- mated costs 1968-69	News- letter No.
SMID, Swedish, ages 7-8 for the deaf and those with defective hearing	1964	1972	240	1968:3
School for the handi- capped, Swedish, Learning to Read, ages 7-9	1965	1971	125	1968:4
Teach yourself material for pupils with diffi- culties in learning, Swedish, Mathematics, ages 7-16	1967	1971	185	1969:1
<u>Other Projects</u>				
School in the 1980's: an attempt to determine trends of development with regard to the renewal of educational material and forms of work	1968	1970		
The study packet in educational technology: presenting a concentrated course in educational production to relieve the acute shortage of educational technologists	1968			
Career teaching problems: developing an overlapping theoretical model for research and development work in career education	1968			
Training research and development personnel: training in educational construction technique for subject experts and training in school research		cont'd	250	
Planning, information: co- ordination and guidance of the continuing expansion of research and development		cont'd	251	
			5,451	